PODIUM SESSION III: INFECTIOUS DISEASE OUTCOMES RESEARCH

IN1

ANTIBIOTIC PRESCRIBING VIA TELEPHONE: HOW OFTEN DOES IT OCCUR?

Willey VJ[1], Ewen E[2], Vichaichanakul K[1], Khole T[1], Dabeer P[1], Loka N[1], Mcghan WF[1], Drees M[2]
[1]University of the Sciences, Philadelphia, Philadelphia, PA, USA, [2]Christiana Care, Newark, DE, USA

OBJECTIVES: Antibiotic prescribing via telephone may be associated with inappropriate antibiotic use and potential bacterial resistance, although limited data exist regarding this practice. The purpose of this analysis was to examine the prevalence and patterns of telephone antibiotic prescribing. **METHODS:** Patients' antibiotic prescription data were retrieved from a large, Mid-Atlantic health system outpatient electronic medical record from 2006-2010. Antibiotic prescriptions were categorized as initiated by telephone or office visit and by antibiotic classifications; antibiotics for chronic use were excluded. Practices were categorized as teaching or private. Annual number of patients was calculated as a three-year running average and patient data were censored on date of death, date of last activity plus 24 months, or January 1, 2011, whichever came earliest. Rates of telephone antibiotic prescribing were calculated and stratified by practice type and antibiotic classification. **RESULTS:** The analysis included 219,282 patient-years (pt-yrs), during which 64,193 antibiotic prescriptions were generated. Overall antibiotic prescribing was 29.3/100 pt-yrs; 12.4% of the antibiotics were prescribed via telephone, although 39.0% of these "telephone-antibiotic" patients had an office visit in the prior 7 days. Antibiotic prescribing overall and via telephone was greater in private practices (34.7/100 pt-yrs and 14.0%) compared with teaching practices (20.6/100 pt-yrs and 8.0%) (both $P<0.05$). Macrolides (25.4%) and beta-lactams (22.9%) were the most commonly prescribed antibiotic classes overall with macrolides and quinolones most common via telephone. Approximately one-fifth of quinolone prescriptions (20.1%) were prescribed via telephone, including 16.6% for newer quinolones (levofloxacin or moxifloxacin). **CONCLUSIONS:** Prescribing via telephone occurred in approximately one in eight antibiotic prescriptions and varied by practice type and antibiotic classification. Significant numbers of prescriptions for newer, broad spectrum antibiotics were generated telephonically. The frequency and prescribing patterns associated with telephone antibiotic prescribing in this population support the need for further study of its impact on antibiotic resistance.

IN2

COMPARATIVE EFFICACY AT 48 WEEKS OF ATAZANAVIR/RITONAVIR VERSUS DARUNAVIR/RITONAVIR IN TREATMENT NAIVE HIV-1 PATIENTS: A MATCHING ADJUSTED INDIRECT COMPARISON OF RANDOMIZED TRIALS

Xie J[1], Juday T[2], Swallow E[1], Du X[1], Uy J[2], Hebden T[2], Signorovitch J[1]
[1]Analysis Group, Inc., Boston, MA, USA, [2]Bristol-Myers Squibb Company, Plainsboro, NJ, USA

OBJECTIVES: No large, randomized head-to-head comparison of atazanavir/ritonavir (ATV/r) and darunavir /ritonavir (DRV/r) for first-line treatment of HIV-1 is currently available. This study compares the efficacy of ATV/r and DRV/r at 48 weeks using a matching-adjusted indirect comparison. **METHODS:** Two similarly designed randomized trials were identified. Individual patient-level data were available for the CASTLE trial comparing ATV/r (n=430) vs. lopinavir/r (LPV/r) (n=438), each in combination with tenofovir/emtricitabine (TDF/FTC); published summary data were used from the ARTEMIS trial comparing DRV/r (n=343) vs. LPV/r (n=346), each in combination with TDF/FTC. To adjust for cross-trial differences, CASTLE patients were re-weighted to match summary baseline characteristics in ARTEMIS. The primary endpoint was virologic response (HIV-1 RNA<50 copies/mL) at 48 weeks assessed using time to loss of virologic response (TLOVR), and was compared between balanced ATV/r and DRV/r trial populations after matching. As a negative control, outcomes in the two LPV/r arms were compared. **RESULTS:** Data from all patients in the two trials were included. Before matching, baseline characteristics differed significantly between CASTLE and ARTEMIS. CASTLE had a higher proportion of patients with HIV-1 RNA>100,000 copies/mL, a lower proportion with CDC class C, and lower median CD4 cell count. Without matching, a naïve comparison showed ATV/r-treated patients had a significantly lower virologic response rate at week 48 than DRV/r-treated patients (78% vs. 84%, p=0.040). After matching, mean baseline characteristics were exactly balanced between CASTLE and ARTEMIS, and virologic response to LPV/r was comparable (77% vs. 78%, p=0.811). There was no significant difference between ATV/r and DRV/r in virologic response rate (80% vs. 84%, p=0.138). **CONCLUSIONS:** After adjusting for cross-trial differences in baseline characteristics, the analysis suggests that ATV/r and DRV/r, each in combination with TDF/FTC, are equally efficacious. A randomized head-to-head trial will provide the gold standard of the comparative efficacy between the two treatments.

IN3

TRANSLATING OUTCOMES FROM A DYNAMIC TRANSMISSION MODEL FOR VARICELLA VACCINATION TO COST-EFFECTIVENESS ESTIMATES: THE IMPACT OF DIFFERENT ANALYTIC APPROACHES ON THE RESULTS

Thompson JR[1], Talbird SE[1], Mauskopf JA[1], Brogan A[1], Standaert B[2]
[1]RTI Health Solutions, Research Triangle Park, NC, USA, [2]GlaxoSmithKline Biologicals, Wavre, Belgium

OBJECTIVES: Compare three different analytic approaches to estimate the cost-effectiveness of a varicella vaccination programme using clinical outcomes from a dynamic transmission model. **METHODS:** An age-structured SIR (susceptible, infectious, recovered) dynamic transmission model was developed to predict the impact of routine infant vaccination on varicella incidence. Individuals transitioned between S and I compartments based on UK force-of-infection data. Each compartment was stratified into 8 age groups to track individuals as they aged over time. Input parameters including force of infection, who-acquires-infection-from-whom (WAIFW) matrix structure, vaccine efficacy, vaccine coverage, costs, QALYs, and demographic data were based on published UK data. The model estimated the incremental cost-effectiveness ratio (ICER) for the vaccination programme using three analytic approaches: summing outcomes 1) for the entire population cumulatively over time (CumPop), 2) for the entire population for the steady-state year (SSPop), and 3) for the lifetime of the first vaccinated birth cohort (Cohort). Costs and QALYs were discounted at 3.5% per year. ICERs were compared for the three analyses for different time horizons and vaccine coverage rates. **RESULTS:** The vaccination programme reached a steady state after 75 years. For this time horizon, the incremental costs per QALY gained for the CumPop (£1,407) and SSPop (£868) analyses were 47% and 68% lower than for the Cohort (£2,678) analysis. In the CumPop and Cohort analyses, the ICER decreased as the model time horizon increased and as vaccine coverage increased. The ICER for the CumPop analysis was always lower than for the Cohort analysis; in the steady-state year, the ICER for the SSPop analysis was the lowest. **CONCLUSIONS:** Cost-effectiveness estimates using data from dynamic transmission models differ depending on the analytic approach, time horizon, and coverage rate used, with the two population approaches yielding lower ICERs because they better capture the full population benefit of herd protection.

IN4

HEALTH CARE RESOURCE UTILIZATION (HCRU) AND COSTS AMONG PATIENTS TREATED FOR NOSOCOMIAL PNEUMONIA (NP) CAUSED BY METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA): SECONDARY ANALYSIS OF A MULTI-CENTER RANDOMIZED CONTROLLED STUDY

Solem CT[1], Niederman MS[2], Chastre J[3], Wan Y[1], Gao X[1], Myers DE[4], Haider S[5], Chambers R[4], Li JZ[6], Van hout BA[7], Stephens JM[1]
[1]Pharmerit International, Bethesda, MD, USA, [2]Winthrop-University Hospital, Mineola, NY, USA, [3]Institut de Cardiologie, Paris, France, [4]Pfizer, Inc., Collegeville, PA, USA, [5]Pfizer, Inc., Groton, CT, USA, [6]Pfizer, Inc., San Diego, CA, USA, [7]University of Sheffield, Sheffield, UK

OBJECTIVES: To compare HCRU and costs between linezolid (LZD) and vancomycin (VAN) using data from a clinical trial assessing the treatment of NP due to MRSA in hospitalized adults. **METHODS:** A post-hoc analysis was conducted using data from a multi-center trial (Wunderink et al, Clin Infect Dis 2012) to assess length of treatment (LOT), length of stay (LOS), intensive care unit (ICU) days, mechanical ventilator (MV) days, and associated costs in NP patients with culture-proven MRSA [modified intent-to-treat (MITT) cohort]. HCRU was collected through end of study (EOS; 7-30 days after end of treatment). Frequency and HCRU of moderate/severe adverse events (MSAE) and renal failure were also assessed. **RESULTS:** MITT patients (n=448; 224 LZD/224 VAN) had mean (SD) age of 61.8(18.0) years, were 65.6% male, 68.8% white, with 63.1% from North America. At EOS, more LZD vs. VAN had clinical success (54.8% vs. 44.9%; p=0.049), 50.9% remained hospitalized. No significant differences were found for HCRU or costs (LZD vs VAN): LOT=10.0(3.9) vs. 9.6(4.5) days; MV days=8.3(9.3) vs. 8.1(9.1); ICU days=10.1(8.8) vs. 10.6(8.7); LOS=17.9(9.6) vs. 18.6(9.7) days. 310 patients developed ≥1 MSAE and had 1.7 days longer LOS vs. patients without MSAE. 43 patients (9 LZD/34 VAN, p<0.0001) developed renal failure; renal failure patients had 4.2(p=0.004), 3.5(p=0.013), and 0.6(p=0.74) days longer MV, ICU, and LOS vs. patients without renal failure. Per patient total costs through EOS were LZD $45,004 ($25,266) vs. VAN $44,897 ($25,356). **CONCLUSIONS:** HCRU and costs were not significantly different for patients treated with either LZD or VAN during the study. Higher drug acquisition costs of LZD may be partially offset by fewer days in ICU and shorter LOS. LOS is likely underestimated because >50% patients remained hospitalized at EOS when LOS was censored. LZD patients were more likely to have clinical success and less likely to develop renal failure.

PODIUM SESSION III: HEALTH-RELATED PRODUCTIVITY

PR1

FDA ACTIONS AGAINST HEALTH ECONOMIC PROMOTIONS, 2002-2011

Neumann PJ, Bliss S
Tufts Medical Center, Boston, MA, USA

OBJECTIVES: To investigate FDA regulatory actions against drug company's health economic promotions from 2002 through mid 2011 to understand the types of economic promotions the Agency considers false or misleading. **METHODS:** We reviewed all warning letters and notices of violation ("untitled letters") issued by the FDA's Division of Drug Marketing Advertising and Communications (DDMAC) to pharmaceutical companies between January 2002 and August 2011. We searched for and analyzed letters containing a violation related to "health economic promotions," defined according to one of several categories (e.g., implied claims of cost-savings due to work productivity; economic claims containing unsupported statements about effectiveness or safety). We also collected information on other factors, such as the indication involved, and whether the letter referenced Section 114 of the Food and Drug Administration Modernization Act (FDAMA), which created a different evidentiary standard for health economic promotions made to formulary committees. **RESULTS:** Of 280 DDMAC letters sent to pharmaceutical companies during the study period, 34 (12%) cited an economic violation. The most common type (found in 20 letters) was an unsupported implied claim of cost-savings due to work productivity or functioning. The next most frequent types included an economic claim containing an unsubstantiated comparative statement of effectiveness, safety, or interchangeability (5 letters) and implied claims of cost-savings to broader audiences than applicable (4 letters). Economic violations